

‘A-B-C’ model for Off-grid Energy Solutions

This presentation is based on the discussions during “Sustainable, Low Carbon Off-grid Electrification Workshop” held in Salima, Malawi during June 3-5, 2013.

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Outline

- 1 What do we want to achieve?
- 2 Key messages from Malawi workshop
- 3 Engaging private-sector for off-grid energy solutions
- 4 Introducing the 'A-B-C' model
- 5 Moving Forward



**WHAT DO WE WANT TO
ACHIEVE?**



The Goals



- Sustainable Energy for All
- The Millennium Development Goals (MDGs)
- Equitable access to energy solutions for all rural consumers
- Development of complementary, incremental approaches
 - Basic energy service
 - Off-grid energy supply
 - Rural electrification
- Greater engagement of the private sector and the non-governmental community
- Commercially viable and sustainable energy solutions



KEY MESSAGES FROM THE MALAWI WORKSHOP

**HELD ON JUNE 3-5, 2013
JOINTLY ORGANIZED BY DEPARTMENT OF
ENERGY, GOVERNMENT OF MALAWI AND
THE WORLD BANK**



Key Messages.

- **Malawi currently has <10% rate of access to energy and >90% rate of access to mobile telephony**
- **The Government is undertaking major efforts to support clean energy through policies to support Independent Power Producers (IPPs)**
- **Physical, technical and financial capacity constraints place a natural limit to the pace of achieving goals of expanding access to electricity solely through government action.**

Key Messages..

Private sector can play a major role in achieving national development objectives, especially off-grid electrification

Policy & Regulatory signals such as, government's recent policies on feed-in-tariff and import duty waivers for renewable energy equipment are crucial for private sector engagement

The Financial sector is keen to do business with IPPs, that have strong off-takers, longer term PPAs and attractive tariffs.

Lessons from mobile telephony and technological innovations can help create new business models that could help bridge the gap.



**IS IT POSSIBLE TO ENGAGE
PRIVATE-SECTOR FOR OFF-
GRID ENERGY SOLUTIONS?**



Understanding Complexity:

- Rural consumer specific challenge
- Regulatory and tariff signals for the private sector
- Availability of financing
- Roles of public, private and NGO sectors



State of Play

- Electrification technologies can range from a few watts for solar lighting and phone charging stand-alone PV, to full grid connections or isolated mini-grid electrification that gives 24/7 access to a sufficient amount of power.
- A great deal of current focus at the lower wattage end of this scale, of getting 1-50W of electricity (micro-energy) to households, for 2-12 hours of power per day
- Mobile telephony has shown that gradual increase in customer use of services is possible and is important to ensure local sustainability while allowing for scaling up
- Mobile enabled solutions are changing the payment and financial transaction culture of all consumers

Improved Technology Choice

- Expanded type and scale of Renewable Energy Technologies
 - Locally specific renewable energy options (biomass, hydro)
 - Individual level technologies (e.g., solar lanterns) to large scale generations (e.g., CSP)
- Power lines or Batteries
 - Low Voltage DC or AC mini- grid
 - Smart Grids
 - Battery-based energy supply
- Metering and Payment
 - Smart, small meters
 - Remote, pre-paid metering systems
 - Mobile money based payment

Opportunity to Combine Efforts Across Sectors

Energy for rural areas

- Key element for poverty alleviation & economic development

Cross-Sectoral Synergy

- Rural telephony
- Rural energy
- Public services
- Rural economic development

Win-Win Solution

- Led by the private sector
- Support mechanism from public sector
- Central role of consumers

Energy Supply in Rural Areas

Supply Side

- Limited power supply
 - High generation costs
 - Built-in losses

challenge

Demand Side

- Limited local income and consumption
- Small customer base
- High transaction costs



INTRODUCING THE 'A-B-C' MODEL

**A STRUCTURED APPROACH TO ENGAGE THE
PRIVATE SECTOR IN PROVIDING OFF-GRID
ENERGY SOLUTIONS**

What is the 'A-B-C' Model?

- The model builds on three sets of customers:
 - Anchors (A)
 - Businesses (B)
 - Community (C)
- For private-sector led commercially viable off-grid energy service provision
- Reduce risks for small private power producers and suppliers
- Improve private-sector access to finance



'A'ncor Customers

Anchors represent daytime load, predictable in nature, requiring continuous delivery. Anchors need to be located near a rural community

- Potential Anchor Customers
 - Telecom towers
 - Retail chains
 - Petrol stations
 - Mining companies
 - Agro-processing industry
 - ..



'B'usiness Customers

Businesses are local commercial establishments for whom power is a critical input for expanding operations or improving productivity

- Businesses
 - Local small businesses and shops
 - Charitable institutions
 - Schools, Clinics, Irrigation systems
 - ..

Opportunity for Business consumers to grow into potential
Anchor customers



'C'ommunity Household Customers

Community members: Affordability is a major issue; may have many other pressing needs in addition to power

Multiple Energy Solutions for the Community

- **Hand-held energy solutions**

- Rechargeable Lamps

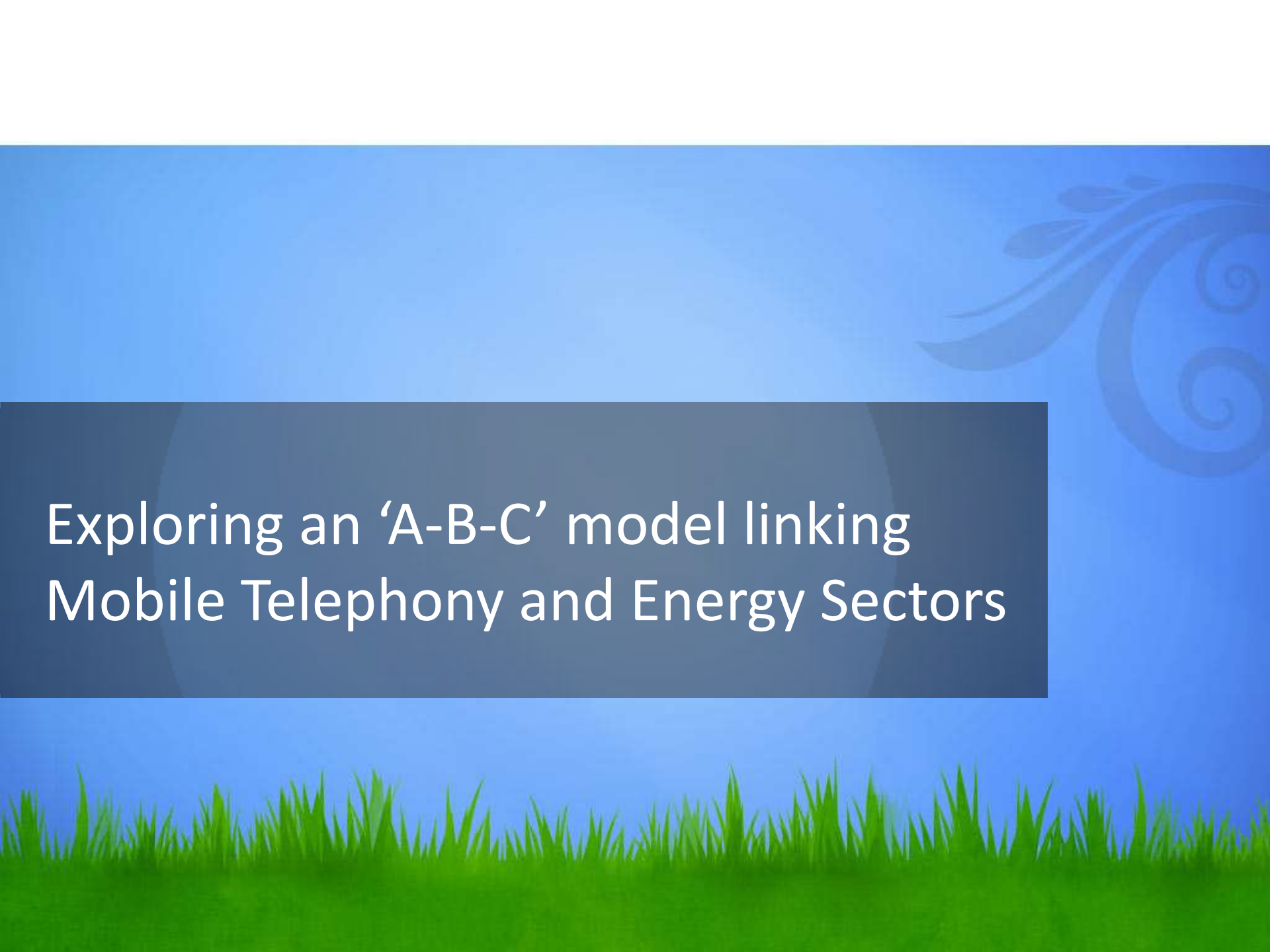
- **Household level solutions**

- Batteries, DC equipment
- Solar Home Systems

- **Community level solutions**

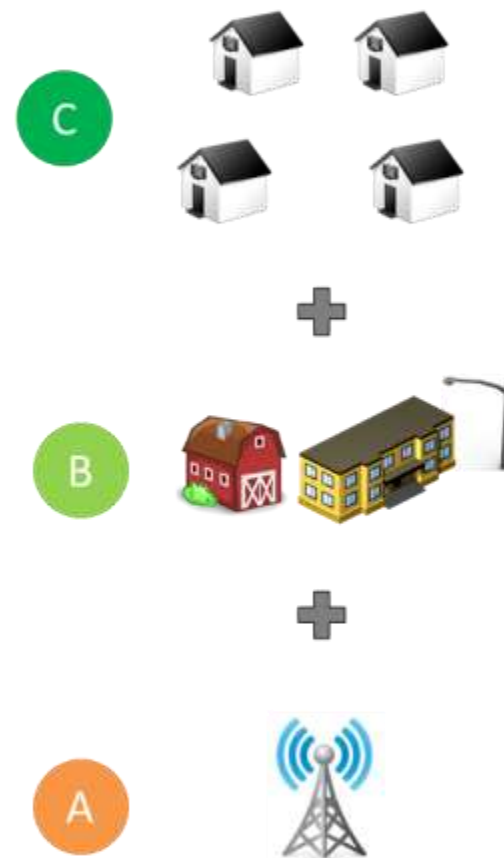
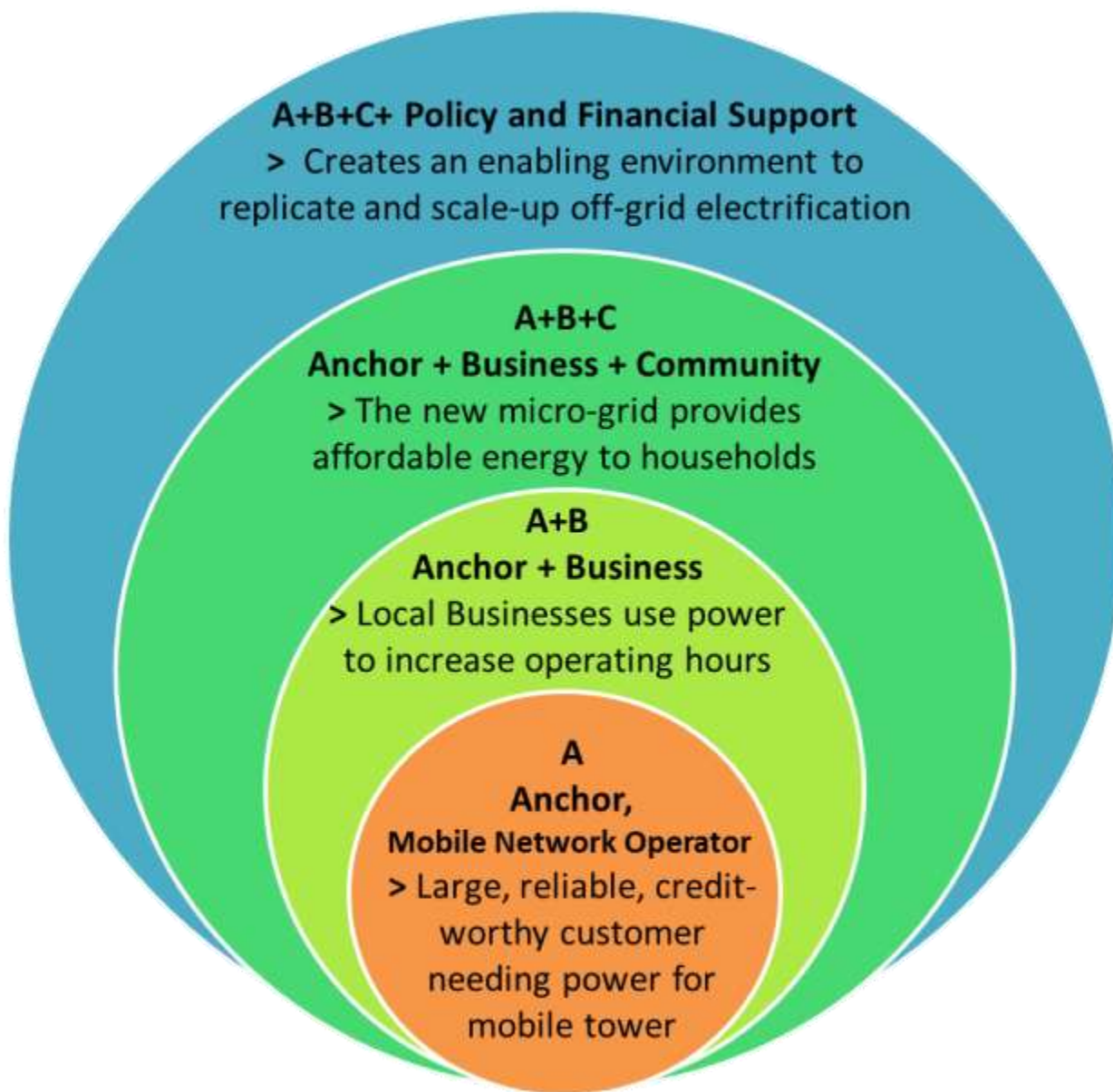
- Mini grids, Micro grids





Exploring an 'A-B-C' model linking Mobile Telephony and Energy Sectors

> The proposed “A-B-C” business model: From **Anchor** to **Business** to **Community**



Evolution of power distribution under the A-B-C Model



**Location-specific
generation:**
Solar cells with back-
up generator



Power Provider:
Energy Service Company (ESCO)

Key relationship:
A multi-year
Power Purchase
Agreement



Anchor customer:
Mobile Tower

**Large, reliable,
credit-worthy
customer
needs power for
mobile tower**



3

**Expansion of Energy
service to
neighboring areas**

2

Community Customer:
Metered Consumers

Households



**Shops,
Factories
School,
Clinic**



Business Customer:
Local businesses, Public
Services

ABC & Commercial Viability to Attract Private-sector ESCO

Type of Customer	High Profit Margin for a Small ESCO Power Supplier?	Do commercial Banks consider this acceptable risk?	Conclusion	Risk Mitigation Impact
Anchor e.g. telecom tower	NO – telecom tower can squeeze ESCO on prices	YES	Telecom tower may not be profitable, but is Bankable	PPA with a Telecom Tower can give ESCO access to Banks
Business e.g. local mills, factories, or shops	YES – it is very expensive for local business to supply itself with power, manage fuel logistics etc	NO	Local business is likely to be profitable but not bankable	PPA with local businesses gives ESCO higher margins, most profitable
Community Member/Household	YES/NO-if household demand is small and variable	NO	Household is neither bankable nor profitable but needs the energy	Supply to local household gives ESCO roots in the community and protection of assets

Adaptations of the 'A-B-C' model

- Where companies with national network of shopping outlets, branches or retailers becomes a wholesale buyer of energy from a Energy Service Company (ESCO)
 - Closest to the Telecom tower model: Banks, Supermarkets
- Where the Anchor is also the Energy Service Company
 - Agro-processing industry in rural areas, which currently generate biomass-based energy for self-use
- Where several 'Business' customers can be combined to act as an 'Anchor' customer
 - Small shopping centers and small industry clusters
- Where programs for supporting construction of schools, health clinics, irrigation systems can be the national 'Anchor' customer



Opportunity for New Partnerships

NGO, Youth Organizations, Retail Chains

Community
Outreach,
Awareness,
Education

Community
level sales
and
aftersales
services

ESCO play central role

Sale to A, B and C
Customers

Energy &
Customer
Management

Anchors

As Consumer of
ESCO services

As Producer with
ESCO Partner





MOVING FORWARD..

- 1. KEY CHALLENGES**
- 2. TESTING THE WATERS**
- 3. BUILDING SYNERGIES**
- 4. LEARNING AS WE GO**

Key Challenges

- Market Information and **Data Collection**, Mapping of Load Locations and Daily Fluctuation in demand
- Information on latest available **technologies** to reduce transactions costs e.g. ICT enabled pre-paid smart meters
- Information on potential **financing** partners (equity, debt, R&D, grant) for investment and working capital
- Information on **Policy and Regulatory** environment—new incentives, how to access government grants, required paperwork, reporting formats
- Information on **identifying local entrepreneurs** in new areas for implementation of a business model

Testing the Waters

Even though the 'A-B-C' business model appears simple and intuitive, it still needs testing and USADF launched a competition in Malawi to enable private sector to test this model by developing a business plan based on this model. See details at the following website: <http://www.usadf.gov/MWIOFFGRID.html>



The screenshot shows the top section of the USADF website. The banner features the USADF logo on the left, which includes a map of Africa and the text 'UNITED STATES AFRICAN DEVELOPMENT FOUNDATION'. To the right of the logo, the text reads 'African Development Foundation' and 'A UNITED STATES GOVERNMENT AGENCY'. Further right is a photograph of three smiling African people. Below the banner is a black navigation bar with white text links: 'About', 'Programs', 'Where We Work', 'How to Apply', 'Work with Us', and 'News'.



HOW TO APPLY
Application Information for Business Planning Grants for Off-Grid Electrification in Malawi

Where We Work
USADF currently operates in more than 20 African countries

BENIN	MAURITANIA
BOTSWANA	NAMIBIA
BURKINA FASO	NIGER
BURUNDI	NIGERIA
CAPE VERDE	RWANDA
GHANA	SENEGAL
GUINEA	SWAZILAND
LIBERIA	TANZANIA
KENYA	UGANDA

USADF – WBICC
Business Planning Grants
June 6, 2013



Quick Links

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Building Synergies

GSMA (Global Mobile Industry Association) through its Mobile Enabled Community Services (MECS) program has been exploring opportunities for “Improving access to basic energy and water services in underserved communities using mobile technology and infrastructure”.

The GSMA’s MECS program is shortly launching a competition for grants to mobile linked rural energy services.

For more information, visit:

<http://www.gsma.com/mobilefordevelopment/programmes/mobile-enabled-community-services>



Learning As We Go

The challenge of provision of energy services in rural areas is not a new one. Over decades, governments have made tremendous efforts to bridge the energy access gap. With new technologies and new business solutions, private sector has an opportunity to complement government efforts in accelerating the pace of energy access. There is a need for collaboratively create approaches that are commercially viable and sustainable. The 'A-B-C' model is a contribution to help initiate this conversation.

We invite you to join the “The Telecom-Energy Initiative” community on the WB hosted platform

<https://collaboration.worldbank.org/login.jspa>

and look forward to your feedback and views.





Thank You!

